Coastal Dune Management in Miami Beach

Elizabeth Wheaton, Environmental Resources Manager

BLUESKIES WHITESANDS GREENCITY

MIAMIBEACH

Coastal Dune Management

I. History/Overview
   i. Causes of Erosion
   ii. Dune Function
   iii. Beach & Dune Habitat
II. Beach Management
III. Dune Management
   i. Objectives
   ii. Management Plan
   iii. Volunteer Efforts
IV. Future?

History of the Miami Beach Dune & Beach Ecosystem

- 1920s: City of Miami Beach was incorporated
- 1975-1980: US Army Corps of Engineers Miami-Dade County Beach Erosion Control and Hurricane Surge Protection project
- Mid-1980s: FDEP and Miami-Dade County create vegetated dune
- Early-2000s: Beachfront Management Agreement with FDEP

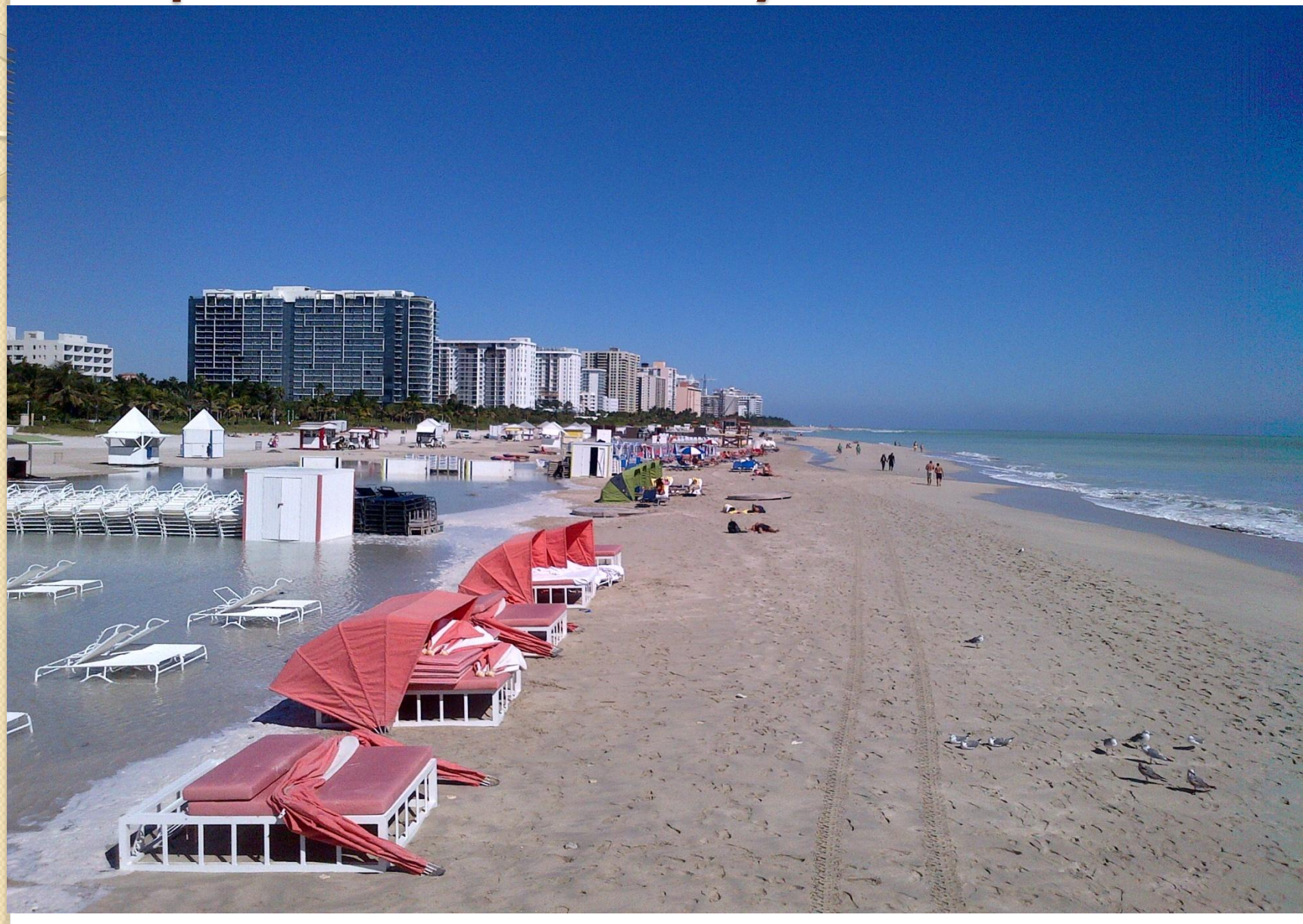
Causes of Erosion

Improved Inlets: Lake Worth

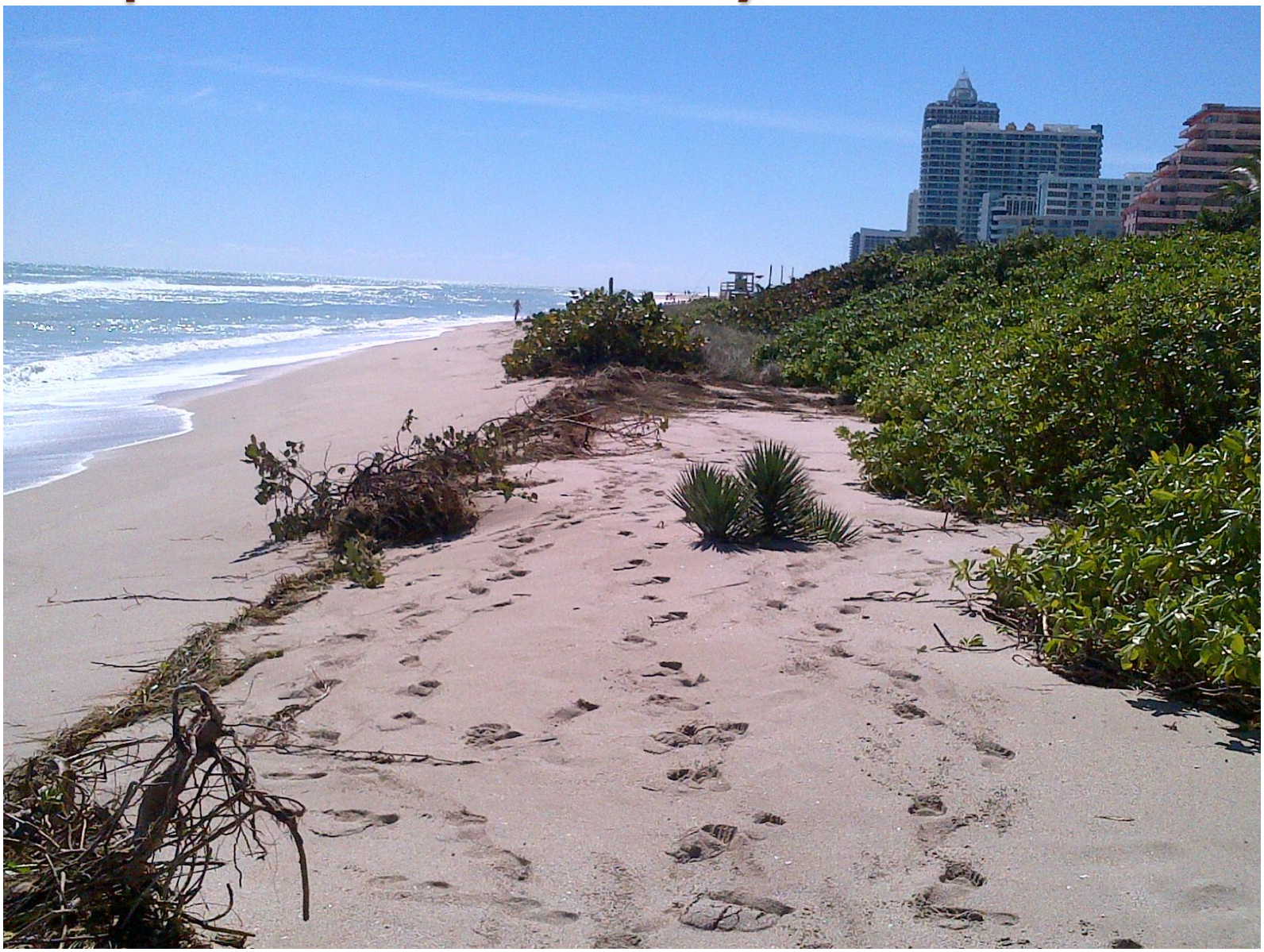
Causes of Erosion

Storms

Tropical Storm Sandy

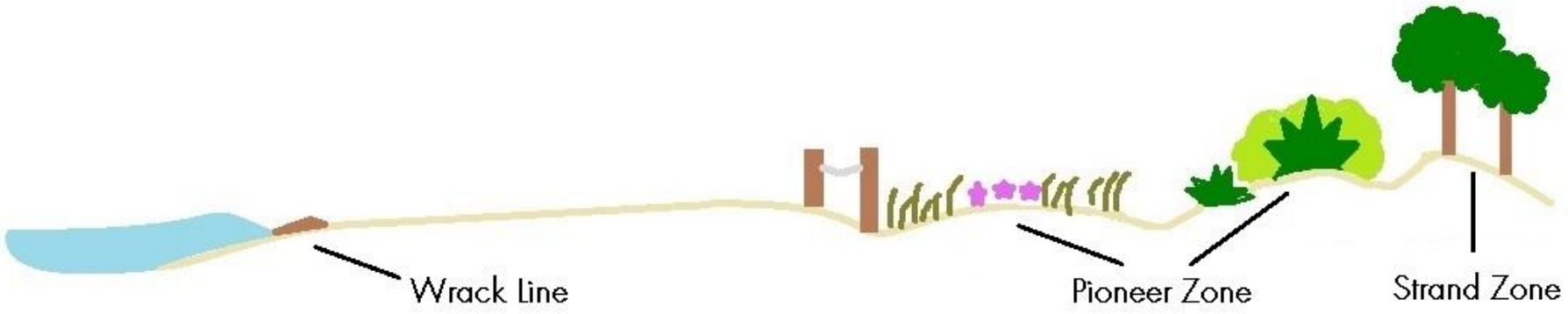


Tropical Storm Sandy



Tropical Storm Sandy

The Miami Beach Beach & Dune System



- Stems and roots trap, accumulate, and stabilize sand
- Acts as sand reservoir
- Minimizes erosion
- Blocks storm surge protecting upland properties
- Acts as an important habitat for both animals and plants


Sand is captured and stored during calm weather.


Deep roots resist wave scour during storms.

Beach & Dune Wildlife


Loggerhead Sea Turtle

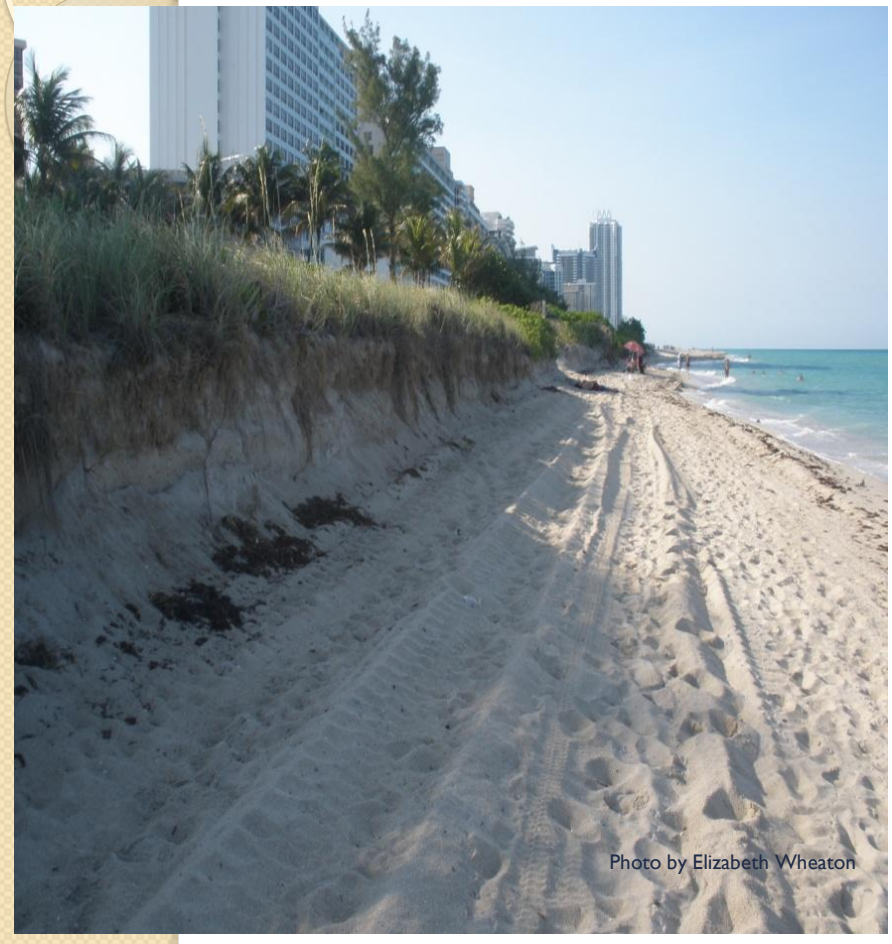

Green Sea Turtle


Jacquemontia reclinata


Tern


Metallic Halictid Bee

Beach Management



- Coastal Construction Control Line Program
- Beachfront Management Agreement
- Beach Renourishment
  - US Army Corps of Engineers Beach Erosion Control & Hurricane Protection Project
  - MDC Emergency Truck Hauls
  - $1 in beach renourishment = approx. $700 return in foreign exchange

Dune Management Strategy

Objective: Maintain the structure, function and ecological processes of beach dune, and prevent any further loss or degradation of these communities in Miami Beach. While also preventing stress and destruction from illegal activities and homeless encampments.

- Restoration Criteria:
  1. Beach dune/coastal strand communities are protected from further degradation;
  2. Areas dominated by the exotic scaevola are replaced with native coastal vegetation;
  3. Invasion of newly created coastal habitat is prevented;
  4. Endemic, rare and imperilled species use these communities have self-sustaining populations in the wild;
  5. Natural succession processes following storm destruction or beach accretion are allowed to occur; and
  6. Selective trimming and pruning of native vegetation to prevent encampments and illegal activities in the protected habitat.

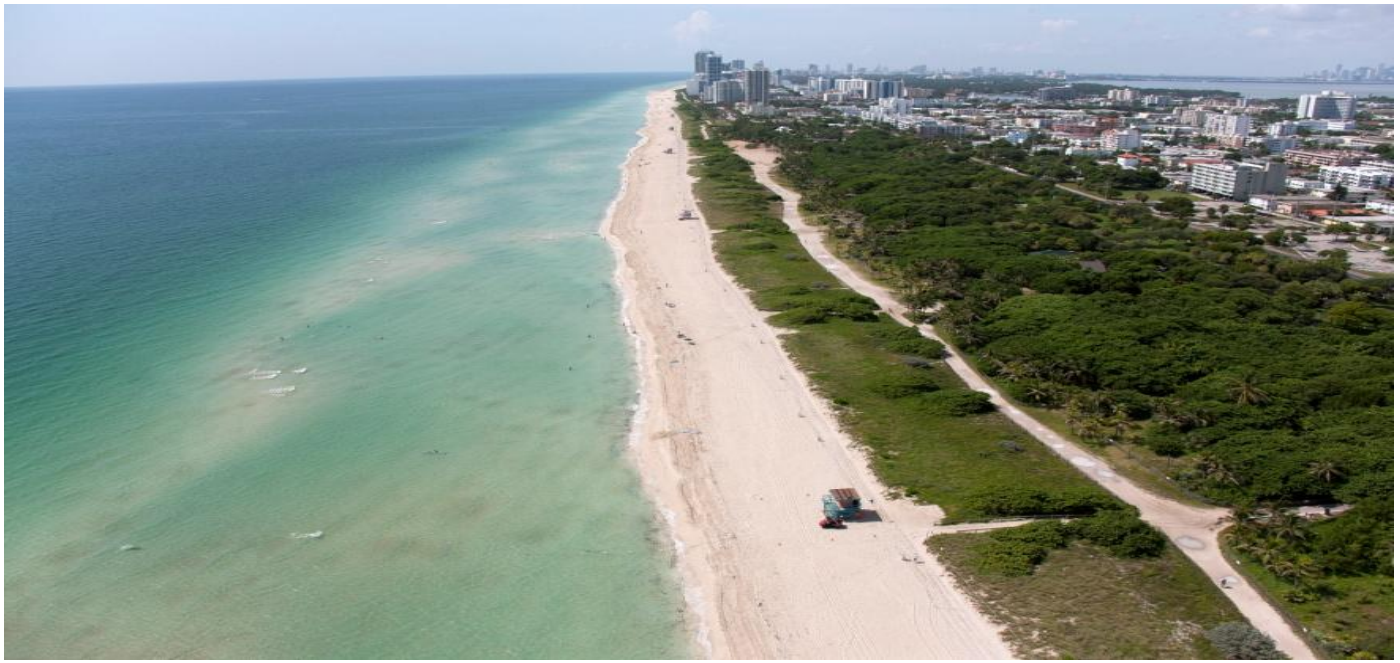
Above: *Scaevola taccada*; Below: *Jacquemontia reclinata*

Dune Management Strategy

- Citywide Dune Restoration & Enhancement Project
- Interdepartmental Coordination
- Dune Maintenance
- Dune Management Plan
- Education & Outreach
- Volunteer Events

Dune Management: Volunteer Efforts

North Shore Open Space Park (79th Street to 87th Street)




August 2012

The Future?

- Short-term
  - Maintain native, mature vegetation that promotes biodiversity
  - Regional Collaboration – South East Florida Climate Change Compact
  - Sand Donation
- Long-term
  - Raise dune height & width

THANK YOU!

Elizabeth Wheaton
Environmental Resources Manager
elizabethwheaton@miamibeachfl.gov
305.673.7080